

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 HISTORY OF ALTERNATIVE DEVELOPMENT

The alternative development process began in February 2003 when the decision to prepare an EIS was made. Alternative development was initiated with a series of interdisciplinary team meetings. The team developed three alternatives within constraints imposed by existing policy and guidance.

The Proposed Action (Alternative A) is to hold a competitive lease sale for federal coal tracts in the WMA as proposed by the applicant. The Proposed Action assumes the applicant (Coteau) would be the successful bidder and that tracts would be mined as a maintenance lease for the Freedom Mine.

The No Action (Alternative B) assumes the lease application would be rejected and federal tracts withheld from leasing. Some 11,480 acres (about 60 percent) of the WMA is underlain by non-federal coal, which could be mined even if federal coal is not leased. Mining of non-federal coal could have substantial impacts on private surface lands above federal coal.

The modified leasing alternative (C) considers ways of preserving, mitigating, and minimizing impacts to cultural resources that are meaningful to American Indian tribes of the Great Plains and the historic preservation community. Alternative C has been modified since the release of the DEIS in April of 2004 because of the inability to acquire certain lands referenced in the DEIS for donation to North Dakota's Indian Cultural Education Trust. The modification was developed in continued consultation with Coteau, the North Dakota State Historic Preservation Office, The Advisory Council on Historic Preservation, the Three Affiliated Tribes, Fort Peck Assiniboine and Sioux, and the Standing Rock Sioux Tribe as part of National Historic Preservation Act compliance for this undertaking.

2.2 MANAGEMENT COMMON TO ALL ALTERNATIVES

Coteau would mine non-federal coal of the WMA, including some 11,480 acres of private and state-owned reserves. Historic Properties affected by coal mining would be mitigated under North Dakota state law (North Dakota Century Code) in concert with SMCRA requirements.

Through year 2000, approximately 220 million tons of lignite coal had been removed from the Freedom Mine, averaging 15-16 million tons/year. Surface disturbances associated with coal extraction are present as follows:

- Previously mined area (to year-end 2002): 16,400 acres
- Active mine area (at year-end 2002): 3,106 acres
- Area completely reclaimed (year-end 2002): 8,425 acres
- Area mined and regraded without respread soil (at year-end 2002): 404 acres
- Areas in long-term use, including office/shop, coal handling, haul roads, stockpiles, and ponds (to year-end 2002): 4,465 acres

BLM would comply with laws, regulations, acts, executive orders, policy, and formally-adopted agreements as described in sections 1.4 and 1.5.

2.3 ALTERNATIVE A (PROPOSED ACTION)

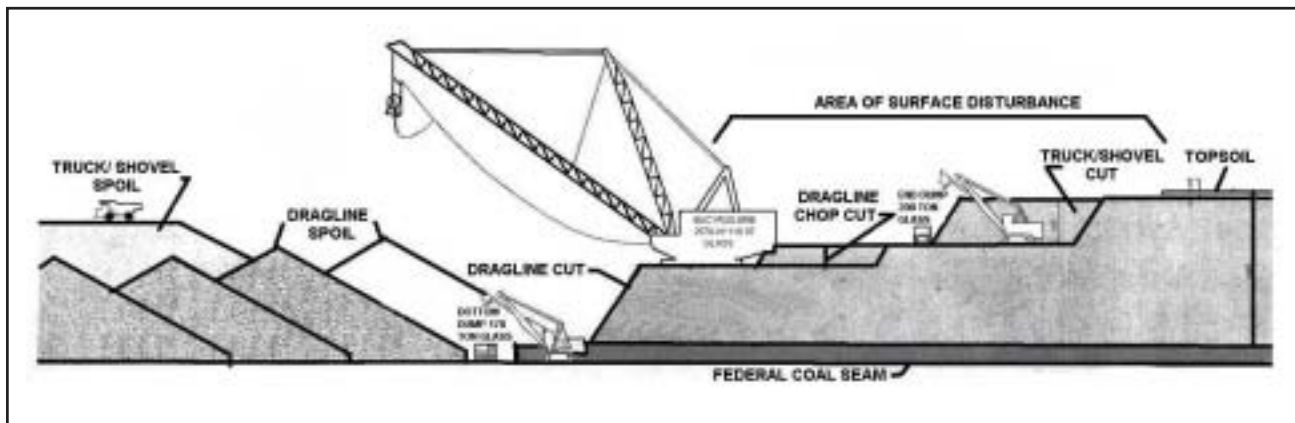
Coteau proposes to lease 5,571 acres of federal coal beneath private surface in Mercer County, North Dakota. The coal (an estimated 93 million tons of federal lignite) would complement reserves of the Freedom Mine. Lease tracts would be subject to standard and special lease stipulations developed for this sale. Under this action, a Traditional Cultural Property (turtle effigy) and a recorded unmarked burial would not be disturbed. To abide by the NHPA, as amended, 14 Historic Properties located over federal coal would be avoided or mitigated for their potential to yield scientific contributions to prehistory. One Historic Property will receive HABS/HAER documentation, and archeological investigations are planned on 26 Historic Properties located over non-federal coal within the WMA, and a total of 780 acres will be avoided by mining activities.

2.4 ALTERNATIVE B (NO ACTION)

Under Alternative B the application to lease federal coal would be rejected and federal coal reserves bypassed during mining. Private surface over federal coal would still be affected (for example, by highwall layback, topsoil stockpiles, haul roads and other activities) as 11,480 acres of non-federal coal are mined.

The most severe surface impacts would occur in a 500-foot wide zone lying adjacent to the highwall (Figure 2.1). Mining would directly affect some 250 acres (roughly 40 percent of a 640-acre section) of surface surrounded on all sides by an open pit.

Figure 2.1
Private Surface Above Federal Coal That is Not Mined



Analysis of an unleased federal section, situated adjacent to an open pit, indicates that approximately one-half of the section would experience direct impacts. Another 40 percent would experience indirect impacts (roads, topsoil piles), while approximately 10 percent would remain undisturbed. Figure 2.2 indicates potential impacts that could occur on unleased lands adjacent to the mining operation.

Historic Properties located on private and state land would be mitigated under the North Dakota Century Code in concert with the requirements of SMCRA as set forth in the North Dakota coal program. All Historic Properties would remain in private ownership and use. The only recorded unmarked burial would be protected from disturbance under North Dakota Century Code (Citation: §23-06-27, Section Title: Protection of human burial sites, human remains and burial goods).

2.5 ALTERNATIVE C (MODIFIED LEASING)

Federal coal would be leased (5,334 acres) with additional protections for cultural resources above those provided in the Proposed Action. Following the Cultural Resource Programmatic Agreement and its approved Management Plan for the WMA, 860 acres of the WMA would be declared off-limits to surface disturbance by mining impacts. By agreement with Coteau, who also controls the surface, 240 acres of federal coal located beneath the W1/2 of Section 4, T. 145 N., R. 88 W., would be removed from the lease application. Within the remaining 5,334 acre lease proposal, BLM would offer for lease and stipulate no surface disturbance to 81 acres within Section 22, T. 145 N., R. 88 W., to protect 32ME1513; similarly, four acres in Section 14, T. 145 N., R. 88 W., would be offered for lease, but with a stipulation to protect the only recorded Traditional Cultural Property (effigy). Also, to avoid additional significant cul-

tural sites within the WMA, there would be no surface disturbance to 535 acres in Section 9, T. 145 N., R. 88 W., and the 240 acres in the W 1/2 of Section 4, T. 145 N., R. 88 W., already removed from the lease application.

This alternative also includes a donation of lands and monies by the lessee to a recently established North Dakota's Indian Cultural Education Trust (Trust). The Trust was established for the purpose of generating income to benefit Indian cultural education. By donating lands to the Trust, a segment of the cultural landscape and the archeological sites they contain would be preserved. These sites, which would be transferred from private ownership into the Trust, would become readily-accessible to tribal peoples.

Donor agreement(s) would provide a donation by the lessee of approximately 1,240 acres and a substantial monetary amount into the Trust. Eight Historic Properties, 191 stone rings, 80 stone cairns, nine rock alignments, and two stone-lined depressions and the Traditional Cultural Property and 525 acres of cultural landscape would be preserved. Also, seven Historic Properties, 116 stone rings, 35 stone cairns, one rock alignment, and three artifact scatters would be avoided by mining planned within the WMA.

2.6 SUMMARY COMPARISON OF ALTERNATIVES

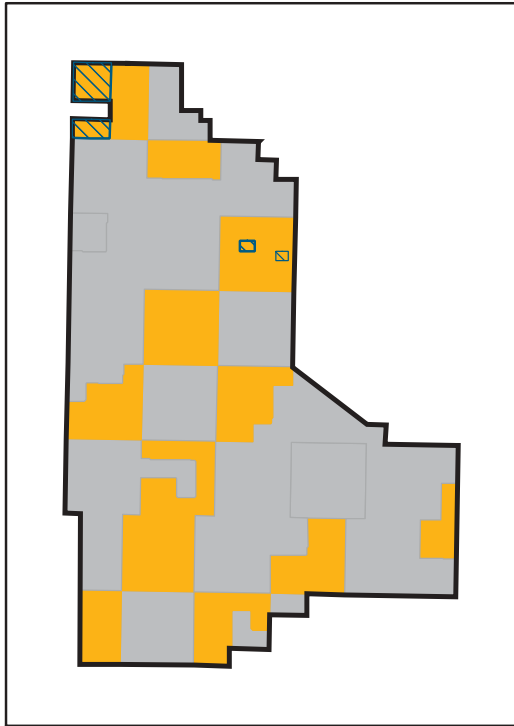
See Tables 2.1 through 2.3 and Figure 2.3.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

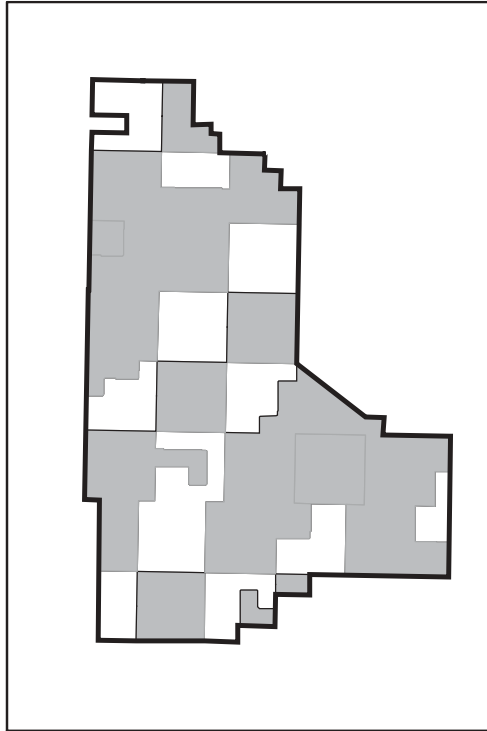
Alternative C is the Preferred Alternative.

The map displays a topographic representation of the study area. Key features include:

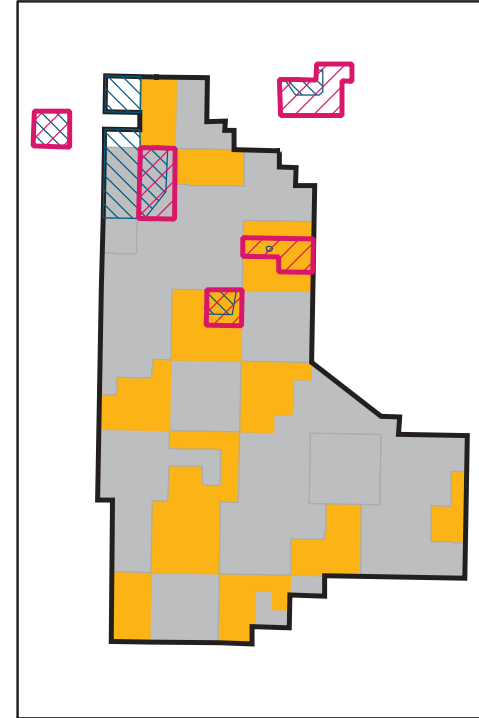
- Land Parcels:** Several parcels are outlined in red and labeled with their areas: 34.72 ACRES, 13.69 ACRES, and 17.57 ACRES. Other parcels are labeled with numbers 2011 through 2019.
- Water Bodies:** Blue areas represent water bodies, including a large one labeled 'SUBSOL' and several smaller ones.
- Infrastructure:** A pink line represents a road or path. A brown line represents a railway or major road. A pink square labeled 'SUBSTATION' is located in the lower right. A pink rectangle labeled 'OVERBUDEN' is located in the lower left.
- Topography:** Contour lines are shown in brown, indicating elevation. A green hatched area is labeled 'TOPSOIL'.
- Grid and Scale:** A grid of 69kV lines is shown at the top. A scale bar at the bottom indicates 0 to 100 meters.



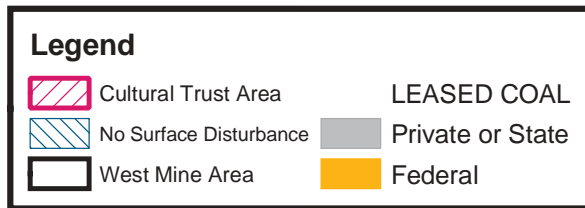
Alternative A, Proposed Action
Federal Coal Leased (5,571 Acres)
No Surface Disturbance Stipulated (248 Acres Federal Coal)



Alternative B, No Action
No Federal Coal Leased



Alternative C, Preferred
Federal Coal Leased (5,334 Acres)
No Surface Disturbance WMA (325 Acres Federal Coal)
No Surface Disturbance WMA (860 Acres ALL Coal)
No Surface Disturbance Cultural Trust (1085 Acres)
Cultural Trust Areas (1,240 Acres Total)



No warranty is made by the BLM for the use of the data for purposes not intended by the BLM

Figure 2.3
Comparison of Impacts According to Alternative

Table 2.1
Summary Comparison of Alternatives

Indicator/Action	Alternative A Proposed Action	Alternative B No Action	Alternative C Modified Leasing
Management in Common: <ul style="list-style-type: none"> · 11,480 acres of non-federal coal would be mined. · Historic Properties affected by coal mining would be mitigated under the North Dakota Century Code in concert with SMCRA requirements. · Federal coal leases would be subject to standard and special lease stipulations. 			
Acres/Estimated reserves of federal coal leased beneath private surface	5, 571 acres/ 90 million tons	0 acres/ 0 tons	5,571 acres/ 90 million tons
Federal coal withdrawn from leasing	0 acres	5,571 acres	0 240 acres/1.9 million tons
Federal coal leased but subject to “No Surface Disturbance” to protect cultural resources	248 acres in Sec. 4, T145N, R88W, and Sec. 14, T145N, R88W	0 acres	4 acres in Sec. 14, T. 145 N., R. 88 W. 81 acres Sec. 22, T. 145 N., R. 88 W.
Historical Properties over federal coal	5 properties would be avoided; 9 properties would be investigated for their information value.	5 properties would be avoided; 9 properties would be investigated for their informational value.	3 properties would be donated to the ND State Indian Cultural Education Trust (includes Bee’s Nest site which is outside of the WMA); 3 properties would be avoided; 9 properties would be investigated for their informational value.
Historical Properties over non-federal coal	8 properties would be avoided; 19 properties would be investigated for their information value.	8 properties would be avoided; 19 properties would be investigated for their information value.	5 properties would be donated to the ND State Indian Cultural Education Trust (includes portion of the Boeckel-Renner site which is outside of the WMA); 4 properties would be avoided; 19 properties would be investigated for their information value.
Additional Compensation for cultural-resource losses.	None.	None.	1,240 acres with access and \$425,000 donated to the Indian Education Trust. Includes 525 undisturbed acres holding 8 Historic Properties with 282 stone features and the only Traditional Cultural Property.

Table 2.2
Summary Comparison of Direct and Indirect Impacts

Description of Potential Impacts by Resource	Magnitude and Duration of Impact	
	Resource Name	No-Action Alternative (B) Proposed Action (A) and Alternative C
Air Quality IMPACTS ASSOCIATED WITH MINING OPERATIONS would include: Elevated concentrations of particulate matter Elevated concentrations of gaseous emissions Water Resources IMPACTS ASSOCIATED WITH MINING OPERATIONS would include: Surface Water Disruption of surface drainage systems Increased runoff and erosion rates Ground Water Removal of shallow aquifers Replacement of shallow aquifers with spoil aquifers Depressed water levels in aquifers adjacent to mine Change in groundwater quality in backfilled areas Soils IMPACTS ASSOCIATED WITH MINING OPERATIONS would include: Loss of soil productivity Soil instability and increased erosion Disturbance of prime farmland Land Use/Vegetation PROGRESSIVE LOSS OF NATIVE VEGETATION would result in: Increased erosion Wildlife and livestock habitat loss Wildlife habitat carrying-capacity loss		

Description of Potential Impacts by Resource	Magnitude and Duration of Impact	
Resource Name	No-Action Alternative (B)	Proposed Action (A) and Alternative C
AFTER RECLAMATION the following could result:		
Changes in vegetation patterns	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Reduction in vegetation diversity	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Wildlife		
DURING MINING the following could occur:		
Wildlife displacement	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary displacement of mammals, amphibians, reptiles, and birds	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Loss of habitat for migratory birds including neo-tropical migrants	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary displacement in waterfowl/migratory bird nesting habitat	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary wildlife habitat loss	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Continued road kills by mine-related traffic	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Cultural		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Loss of 91 sites (14 are NR eligible); 624 stone features (rings, cairns, and alignments); and 5,323 acres of cultural landscape.	Major, long term on active mine areas	Same as No Action on expanded mine areas Under Alternative C (Preferred) 8 Historic Properties, 280 stone features, 1,240 acres and \$425,000 are placed in the Indian Cultural Education Trust as an offset to impacts.
Environmental Justice		
EFFECTS DURING MINING would include: (See Cultural impacts)	See Cultural impacts	See Cultural impacts
Socio-economics		
EFFECTS DURING MINING would include:		
Employment Potential (no additional jobs in mine are expected)	Moderate, long term on existing mine area	Same as No Action on expanded mine areas

Table 2.3
Summary Comparison of Magnitude and Duration of Cumulative Impacts

Description of Potential Impacts by Resource		Magnitude and Duration of Impact	
Resource Name	No-Action Alternative (B)	Proposed Action (A) and Alternative (C)	
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:			
Elevated concentrations of particulate matter	Moderate, short term on active mine areas	Same as No Action on expanded mine areas	
Elevated concentrations of gaseous emissions	Moderate, short term on active mine areas	Same as No Action on expanded mine areas	
Water Resources			
IMPACTS TO SURFACE WATER could result in:			
Temporary reduction in soil infiltration rates and increase runoff	Moderate, short term on active mine area	Same as No Action on expanded mine areas	
IMPACTS ON GROUNDWATER could result in:			
Depressed water levels in aquifers adjacent to mine	Moderate, short term near active mine area	Same as No Action on expanded mine areas	
Change in groundwater quality in backfilled areas	Moderate, long term near active mine area	Same as No Action on expanded mine areas	
Soils			
RECLAIMED SOILS could result in:			
Increased soil productivity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas	
Reduced erosion	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas	
Land Use/Vegetation			
IMPACTS ON LAND USE could result in:			
Loss of agricultural production	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas	
Reduction of wildlife habitat	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas	
SURFACE DISTURBANCE would result in:			
Loss of common native vegetation types for wildlife	Negligible, long term on existing mine area	Same as No Action on expanded mine areas	
Regional loss of vegetative diversity	Negligible, long term on existing mine area	Same as No Action on expanded mine areas	
Wildlife			
IMPACTS ON WILDLIFE FROM SURFACE MINING could result in:			
Loss of habitat for migratory birds	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas	
Reduction in waterfowl habitat	Minor, short term on existing mine areas	Same as No Action on expanded mine areas	
Permanent reduction in wildlife habitat diversity	Minor, long term on existing mine areas	Same as No Action on expanded mine areas	
Permanent reduction in some wildlife carrying capacity	Minor, long term on existing mine areas	Same as No Action on expanded mine areas	

Description of Potential Impacts by Resource		Magnitude and Duration of Impact	
Resource Name	No-Action Alternative (B)	Proposed Action (A) and Alternative (C)	
Cultural IMPACTS ASSOCIATED WITH MINING OPERATIONS would include: Loss of 740 sites, 2,491 features, 68,683 acres of cultural landscape. Destruction of cultural features and landscape, archeological sites eligible for National Register are mitigated for purposes of NHPA by data recovery or avoidance.			
	Major, long term on existing/active mine areas	Same as No action on expanded/active mine areas Under Alternative C, (Preferred), 8 Historic Properties, 282 stone features, 1,240 acres and \$425,000 are placed in Indian Cultural Education Trust as offset to impacts.	
Socio-economics IMPACTS ON SOCIOECONOMICS could include:			
Mineral and energy related development	Minor, short term on existing mine	Same as No Action on expanded mine areas	
Employment	Minor, short term on existing mine	Same as No Action on expanded mine areas	
Housing market	Minor, short term due to existing mine	Same as No Action on expanded mine areas	
Economic development	Minor, long term due to existing mine	Same as No Action on expanded mine areas	
Revenues and royalties	Minor, long term due to existing mine	Same as No Action on expanded mine areas	

